ORDER NO. SD7807-1404

Service Manual

SB-E100

Linear Phase Speaker System

SB-E100

(XG),(XGE),(XGF)

* The model SB-E100(XG) is available in European only.
* The model SB-E100(XGE) is available in England only.
* The model SB-E100(XGF) is available in France only.

■ SPECIFICATIONS

(Specifications are subject to change without notice for further improvement.)

Type:	3-way, 3-speaker system
Speakers:	Woofer: 30cm (12") cone type Midrange: Horn type Tweeter: Horn type
Impedance:	6 ohms
Input power:	150W, Music 100W, DIN (RMS)
Output sound-pressure level:	95dB/W (at 1.0m)
Crossover Frequency:	1500Hz, 6500Hz
Frequency Range:	37~22000Hz
Dimensions:	52.5(W)×84.6(H)×42.4(D) cm 20-5/8"(W)×33-1/4"(H)×16-5/8"(D)
Weight:	29kg (63.9 lbs)

■ TECHNISCHE DATEN

(Spezifikationen können infolge von Verbesserungen ohne Ankündigund geändert werden.)

Typ:	System mit 3 Lautsprechern und 3 Bereichen
Lautsprecher:	30-cm-Tieftonlautsprecher Konustyp
Impedanz:	6 ohm
Spitzenbelastbaikeit:	150W, Music 100W, DIN(RMS)
Abgegebener schalldruckpegel:	95dB/W (im Abstand von 1m)
Überschneidungs-frequenz:	1500Hz, 6500Hz
Frequenzumfang:	37~22000Hz
Abmessungen:	52.5(L)×84.6(H)×42.4(D) cm 20-5/8"(L)×33-1/4"×16-5/8"(D)
Gewicht:	29kg (63.9 lbs)

■ CARACTERISTIQUES TECHNIQUES

(Sujet á changement sans préaris.)

Type:	Système à 3 hauts-parleurs et 3 canaux
Hauts-parleurs:	Woofer: 30cm à cône
Impédance:	6 ohms
Entrée maximale instantanée:	150W, Music 100W, DIN(RMS)
Pression du niveau sonore de sortie:	95dB/W (à 1m)
Fréquence de commutation:	1500Hz, 6500Hz
Gamme de fréquences:	37~22000Hz
Dimensions:	52.5(L)×84.6(H)×42.4(D) cm 20-5/8"(W)×33-1/4"(H)×16-5/8"(D)
Poids:	29kg (63.9 lbs)

Technics

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

■ FEATURES

- **High efficiency, high input resisting 30cm woofer**
  In order to make the most of the horn type speaker system, the woofer is required to be highly efficient and to have a frequency characteristic to go smoothly with the mid-range. In this respect, the system uses Canadian coniferous pulp and cones with liner elements combined, thus assuring a high efficiency of 95dB/W(1.0m). Also, to improve the linearity coping with a large input, well-ventilated high compliance dampers and non-directional urethane edges are employed. Furthermore, polyester insulator and polyamide layers are used for the voice coils, and extra-high heat resisting resin film is used for the bobbins so that the system is able to withstand continuous since waves of as high as 100 Watts (DIN RMS).

- **Wide-directional radial horn mid-range**
  Frequency characteristics with wide-band and excellent directivity are obtained with a radial horn widening at 150 deg. from aluminum die-cast horn throat and newly developed shell type equalizer (mid-range). The driver section is made of extra-thin aluminum alloy of 35ϕ, 30μm thick, and the edge, provided with slits, employs perforated pole pieces to improve the low-range characteristic, and is high input resisting with heat radiating aluminum bobbin of μm, CCAW (copper coated aluminum wire), and heat resisting voice coils.

- **Wide-directional radial horn tweeter**
  This wide-directional radial horn, widening at 150 deg., is of high precision solid type made of aluminum diecast.
  The driver section consists of metalized polyester film vibrating reeds and employs a powerful magnetic circuit using a large aluminum magnet, and is high input resisting with use of heat resisting voice coils.

- **Linear phase network**
  Linear phase characteristics are obtained by a dividing network combining 12 dB/oct and inductive M types, thus making reliable transfer of waves possible.
  Also, low-distortion filament cores are employed for choke coils.

- **Control tower**
  It is equiped with a thermal relay protection circuit in order to protect the mid-range and tweeter from excess input or abnormal signals. Also, to use it as a multiamp system, it is provided with multi-amp input terminal along with a multi-amp switching connector. Besides these functions, dividing network, level control and input terminal are concentrated at the control tower which also serves to secure drivers of the mid-range and tweeter, thus improving the controllability.

■ POWER HANDLING CAPACITY

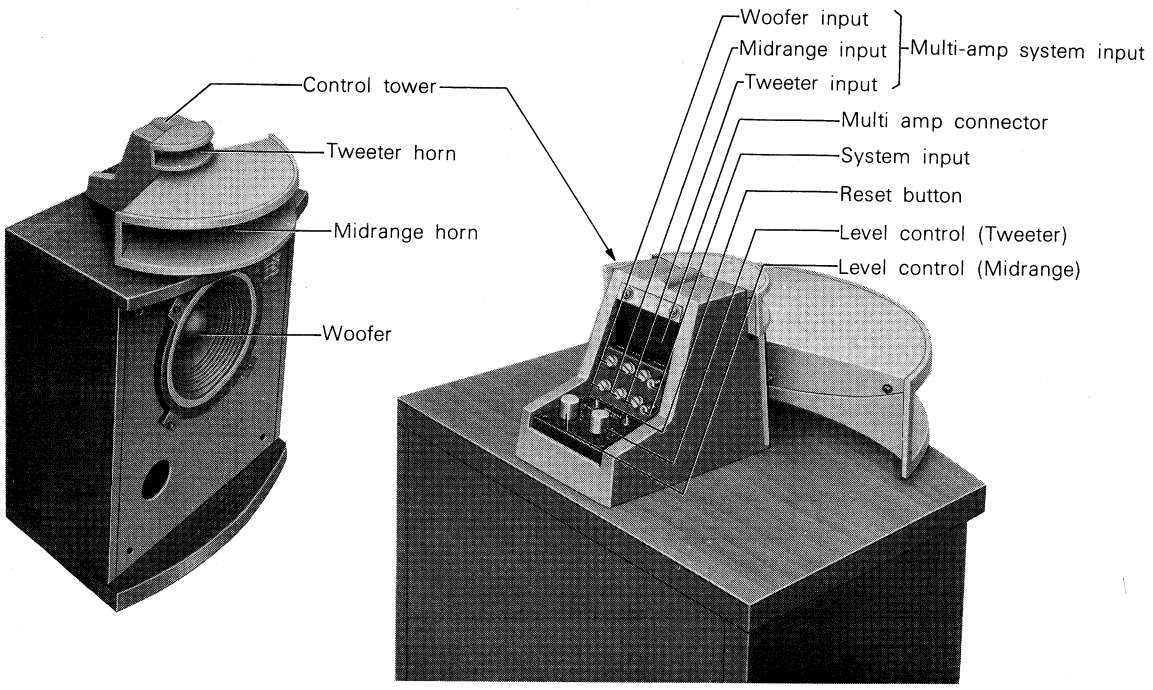
The power handling capacity of this speaker system is 150 **watts (music),** and 100 watts DIN (RMS).
If the following special types of signals are applied to the speaker system, be sure to reduce the volume level of the amplifier.

1. Interstation hiss on the FM broadcast band.
2. Output from a tape deck during fast forward or rewind.
3. Acoustic feedback from a microhpone or an electric musical instrument.
4. "Shock" noise which occurs when the power switch of amplifier, etc, is turned on or off, when input or output connection cords are connected or disconnected, or when a phono cartridge is replaced.

Use the speaker system with care to avoid damage by any of the above.

- Keep the speaker system away from heating appliances or other sources of heat, and do not expose it to direct sunlight or excessive moisture.
- Do not install the speaker system near a TV set, because the image of the TV set may be disturbed by the magnets used in this speaker unit.
- Never use a chemically-treated cloth, alcohol, thinner, benzine, insecticide or other volatile chemicals to clean the cabinet because to do so may damage the luster of its fine finish.

■ LOCATION OF CONTROLS



■ MULTI-AMP SYSTEM

- The impedance of each unit of woofer, midrange and tweeter is 6Ω. Therefore, make sure that the load impedance of the amp used ranges from 4Ω to 16Ω.
- When the multi-amp switching connector is set to "multi amp system", the network, level control and protection circuit of this system are disconnected. The sound volume of each unit can be adjusted by turning the volume knob of each amp.
- It is recommended to use the system with crossover frequencies between speakers as follows:
  Woofer – Midrange: 1.2kHz ~ 2kHz
  Midrange – Tweeter: 5kHz ~ 10kHz
- In order to protect the speaker unit against low-range noise from the amp, connect a bipolar condenser of about 68μF between amp and speaker, and about 10μF to tweeter respectively in series.

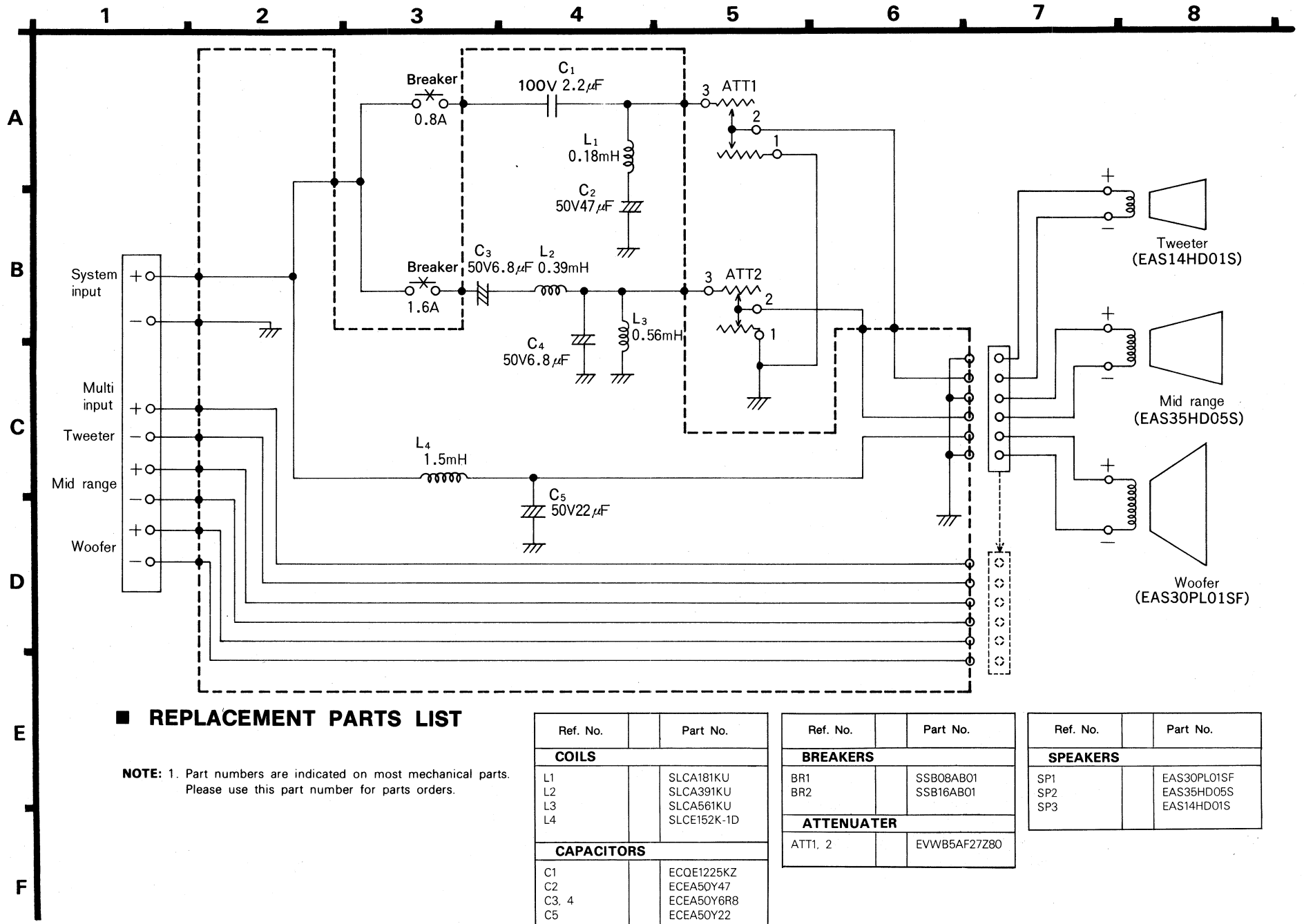
■ SPEAKER PROTECTION CIRCUIT

This system is equipped with a speaker protection circuit to protect the speaker from excess input or abnormal signals. If excess input is applied to the speaker, it will be automatically cut off by the protection circuit.

- **When the tweeter or midrange stops producing sounds (treble or mean) during playing:**
  1. Turn down the volume of the amp,
  2. Check for abnormality in the system,
  3. If the system is normal, wait for 20 sec.,
  4. And then push the reset button to cancel the protection circuit.
- After resetting the protection circuit, do not increase the volume of the amp.

■ SCHEMATIC DIAGRAM

This schematic diagram may be modified at any time with the development of new technology.



■ REPLACEMENT PARTS LIST

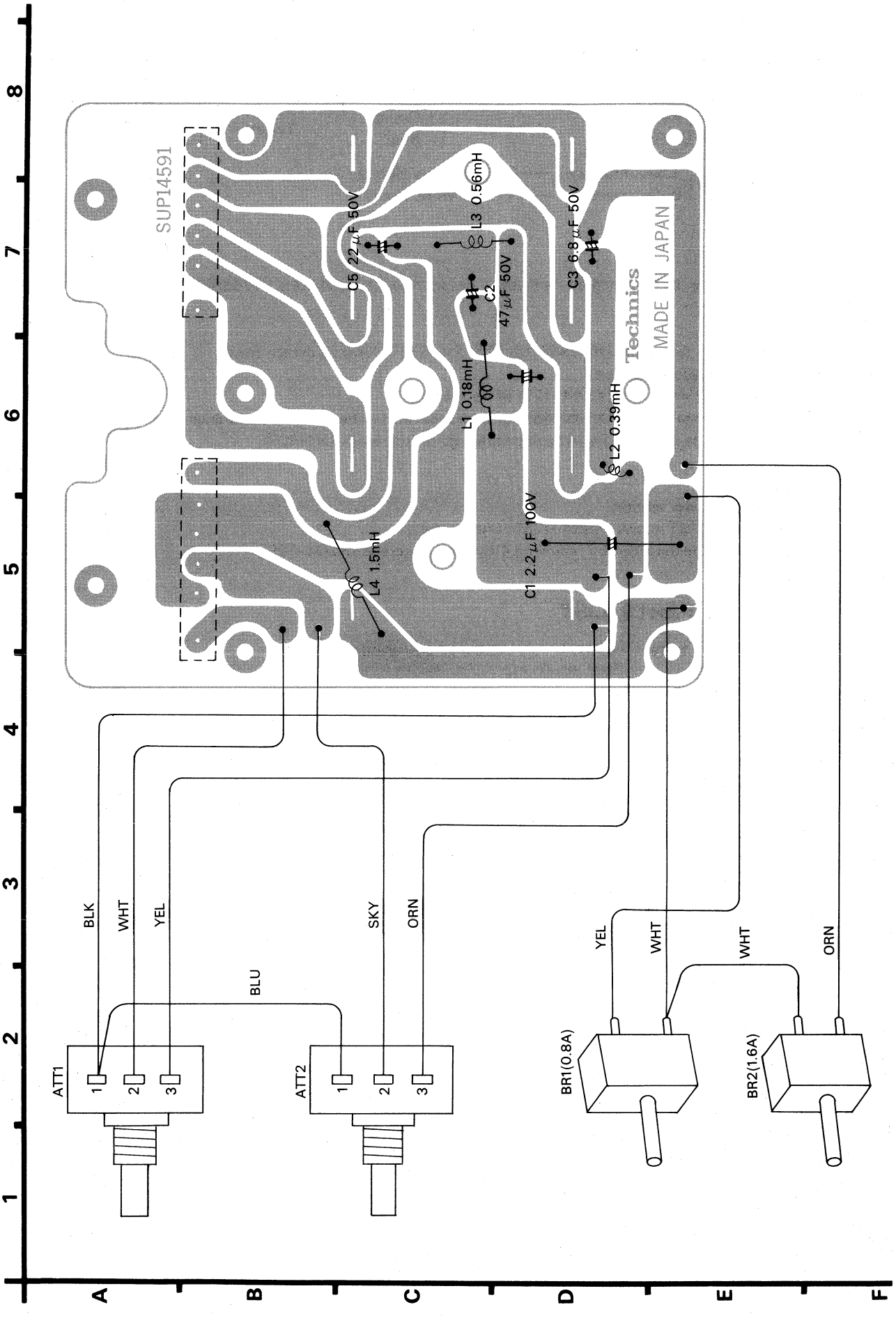
NOTE: 1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.

Ref. No.		Part No.
COILS		
L1		SLCA181KU
L2		SLCA391KU
L3		SLCA561KU
L4		SLCE152K-1D
CAPACITORS		
C1		ECQE1225KZ
C2		ECEA50Y47
C3, 4		ECEA50Y6R8
C5		ECEA50Y22

Ref. No.		Part No.
BREAKERS		
BR1		SSB08AB01
BR2		SSB16AB01
ATTENUATER		
ATT1, 2		EVWB5AF27Z80

Ref. No.		Part No.
SPEAKERS		
SP1		EAS30PL01SF
SP2		EAS35HD05S
SP3		EAS14HD01S

■ CIRCUIT BOARD



■ HOW TO REMOVE EACH UNIT

* Connections of each unit

Woofer { + Red / – Green Midrange { + Orange / – Blue Tweeter { + Yellow / – Black

Breaker { 1.6A (midrange) —— Orange, white (short) / 0.8A (tweeter) —— Yellow, white (long)

• Woofer

1. Woofer can be detached by removing 4 hexagon socket head bolts (XVES6B25X1).

• Midrange

1. Remove 4 set-screws (XVES5B10X1S & XVES5B70X1S) to detach tower.
2. Remove woofer section.
3. Remove 2 set-screws (XSN4+12S) of horn angle.
4. Remove 4 set-screws (XSN4+45S) of midrange horn. Then take out midrange horn.
5. Unit can be detached by removing midrange set-screws (XSN4+12S).

• Tweeter

1. Detach tower section.
2. Remove 2 set-screws (XSN4+12S) of horn angle.
3. Unit can be detached by removing 4 tweeter set-screws (XSN4+12S).

■ REPLACEMENT PARTS LIST

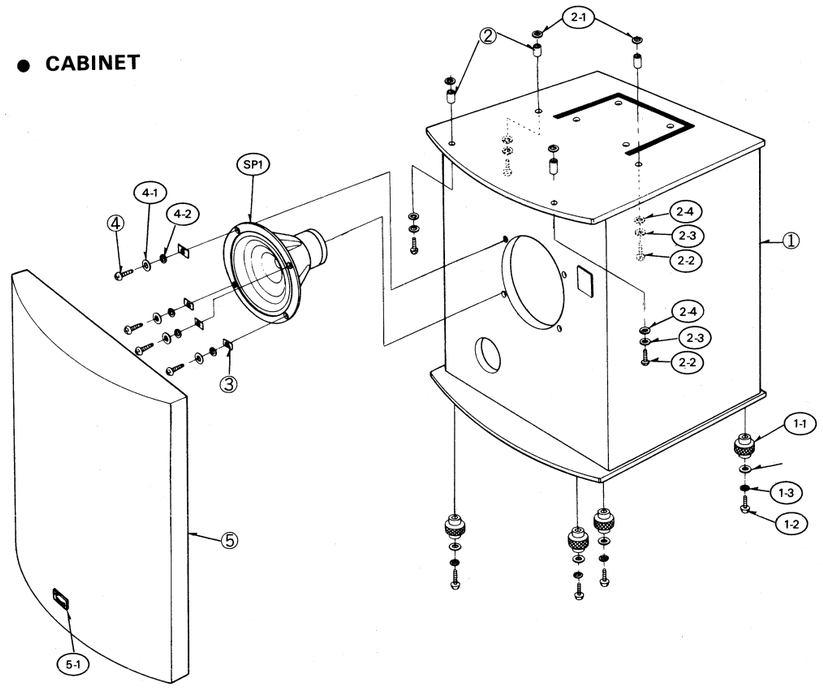
NOTE: 1. Part numbers are indicated on most mechanical parts.
Please use this part number for parts orders.

Ref. No.		Part No.	Part Name & Description
CABINET PARTS			
1		SKABE100G	Cabinet
1-1		SYL89	Foot
1-2		XMM31+25	Screw, Foot
1-3		XWG3F13	Washer, Foot
2		SKL215	Spacer, Mid Range Horn
2-1		XWG4G16	Washer, Spacer
2-2		XSN4+45S	Screw, Spacer
2-3		XWA4	Washer, Spacer
2-4		XWG4F13	Washer, Spacer
3		SGE399	Bracket, Woofer
4		XVES6B25X1	Screw, Woofer
4-1		XWAR6BFZ	Washer, Woofer
4-2		SNW653	Washer, Woofer
5		SYB551-1	Grille
5-1		SGB533	Badge
6		SME55-1	Bracket, Tower, Left
7		SME57	Bracket, Tower, Left
8		SME55	Bracket, Tower, Right
8-1		XSN4+12S	Screw, Tower
8-2		XWG4	Washer, Tower
8-3		XTN3+8	Screw, Bracket
8-4		XWG3	Washer, Bracket
8-5		XSN4+25S	Screw, Cabinet
8-6		XWG4	Washer, Cabinet
9		SWT403	Terminal Ass'y
9-1		SNE273-2	Knob, Terminal
9-2		XTV3+12	Screw, Terminal
9-3		XWG3	Washer, Terminal
19		SGEBE100N4	Tower with Panel
10-1		XVES5B70X1S	Screw, Tower & Cabinet
10-2		XWA5BFZ	Washer, Tower
10-3		SHW49N100	Washer, Tower
11		SGU101-1	Plate
11-1		XSN4+10FZS	Screw, Plate
11-2		XWA4	Washer, Plate

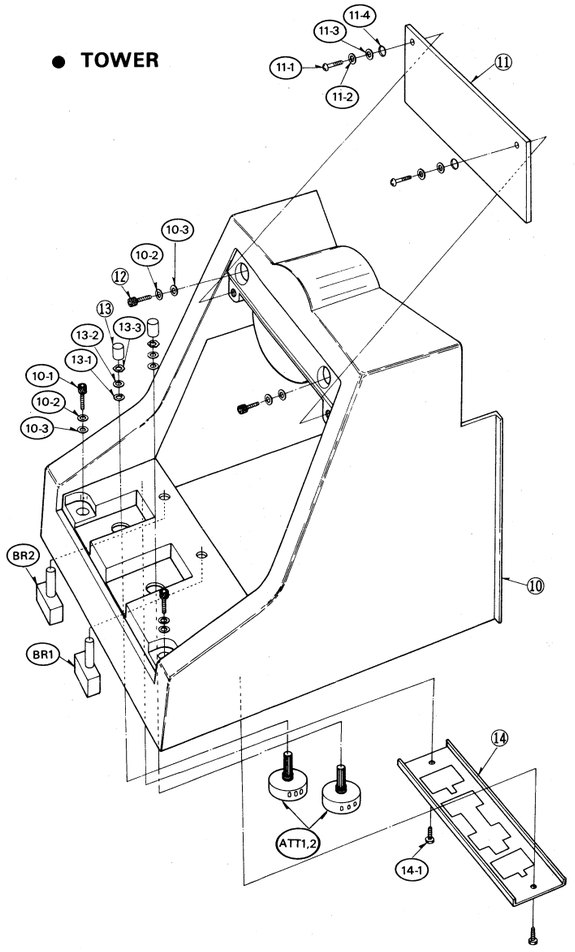
Ref. No.		Part No.	Part Name & Description
11-3		XWG4	Washer, Plate
11-4		SNW429-1	Washer, Plate
12		XVES5B10X1S	Screw, Tower
13		SBN793	Knob, Attenuater
13-1		XWG9E15FZ	Washer, Attenuater
13-2		XWV9FZ	Washer, Attenuater
13-3		XNG9	Nut, Attenuater
14		SME53	Bracket, Breaker
14-1		XTN3+12	Screw, Bracket
15		SGEBE100N	Tweeter Horn
15-1		XSN4+12S	Screw, Tweeter Horn
15-2		XWA4	Washer, Tweeter Horn
15-3		XWG4	Washer, Tweeter Horn
16		SGEBE100N1	Lid, Tweeter Horn
16-1		XSN3+8FZS	Screw, Lid
16-2		XWA3	Washer, Lid
16-3		XWG3	Washer, Lid
17		XVES4B10X1S	Screw, Lid
17-1		XWA4BFZ	Washer, Lid
18		SGEBE100G	Mid Range Horn
18-1		XSN4+12S	Screw, Mid Range Horn
18-2		XWA4	Washer, Mid Range Horn
18-3		XWG4	Washer, Mid Range Horn
19		SGEBE100N3	Lid, Mid Range Horn
19-1		XVES4B16X1S	Screw, Lid
19-2		XWA4BFZ	Washer, Lid
19-3		SNW429-1	Washer, Lid
19-4		XSN4+16S	Screw, Lid
19-5		XWA4	Washer, Lid
19-6		XWG4	Washer, Lid
20		SUW1367	Bracket, Mid Range Lid
20-1		XSN4+16S	Screw, Bracket
20-2		XWA4	Washer, Bracket
20-3		XWG4	Washer, Bracket

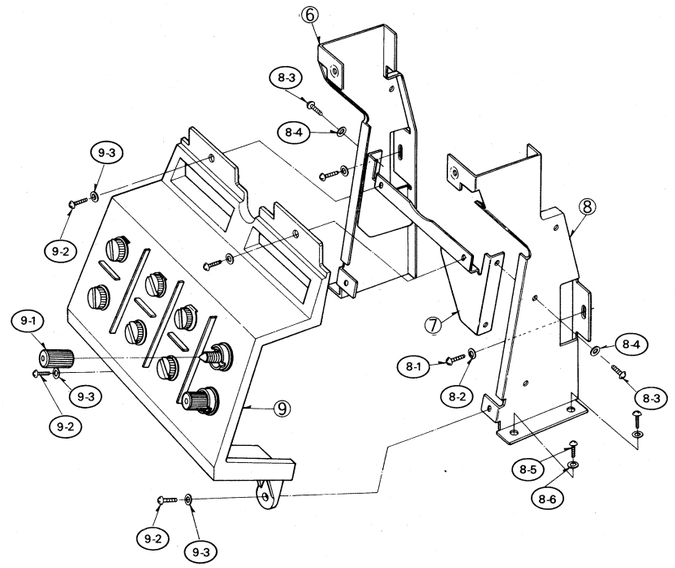
■ EXPLODED VIEW

● CABINET

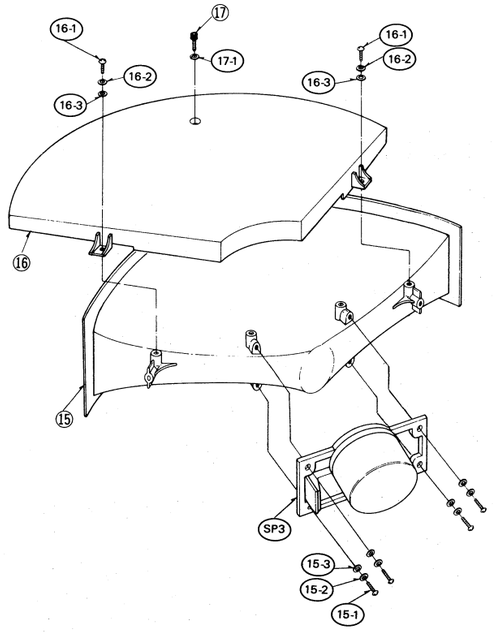


● TOWER

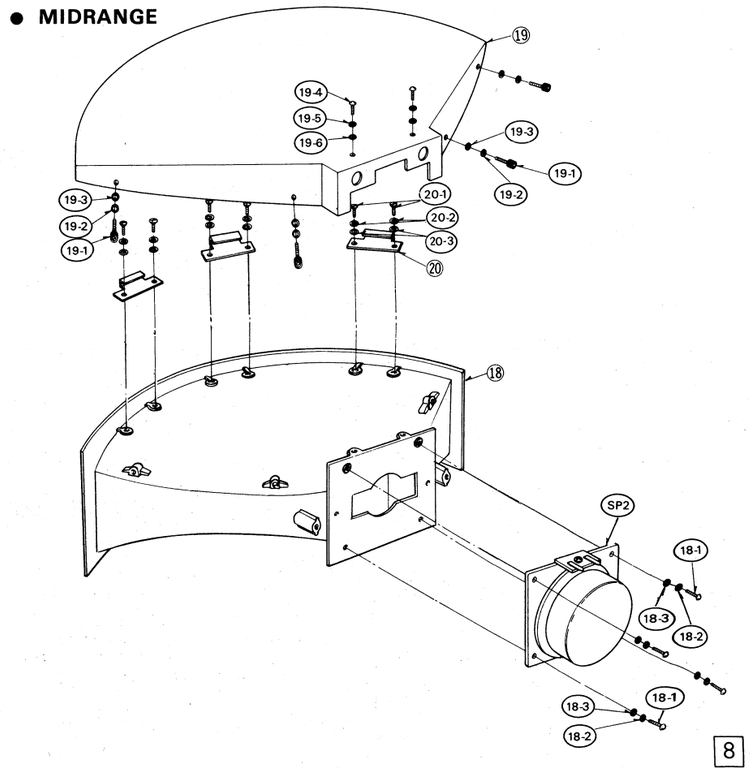




● TWEETER

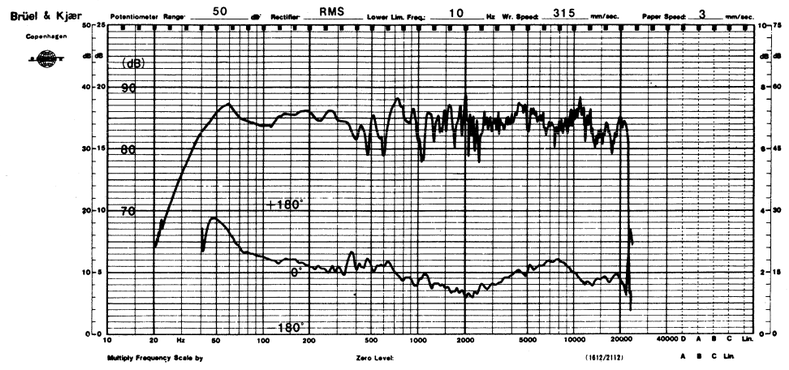


● MIDRANGE

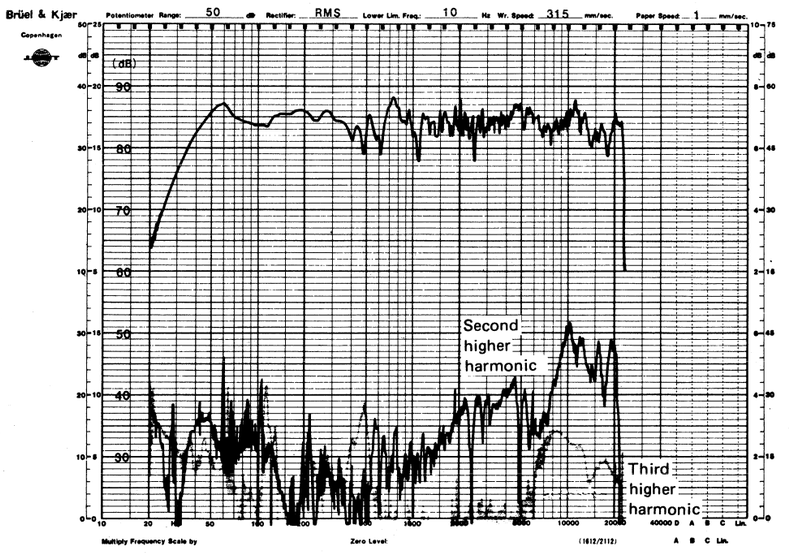


■ RESPONSE CHARTS

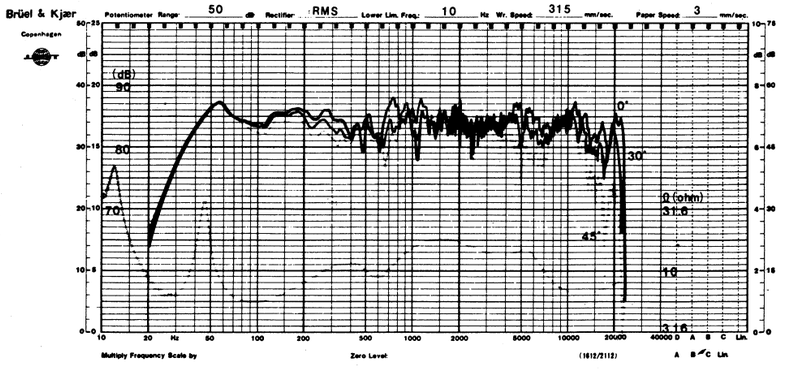
1 Amplitude/Frequency Response and Phase/Frequency Response (MIC-SP. 2m, Input Voltage 2.45V)


Brüel & Kjær
Potentiometer Range: 50 dB Rectifier: RMS Lower Lim. Freq.: 10 Hz Wr. Speed: 315 mm/sec. Paper Speed: 3 mm/sec.
(dB)
90
80
70
+180°
0°
-180°
10 20 Hz 50 100 200 500 1000 2000 5000 10000 20000 40000 D A B C Lin.
Multiply Frequency Scale by
Zero Level
(1612/2112)
A B C Lin.

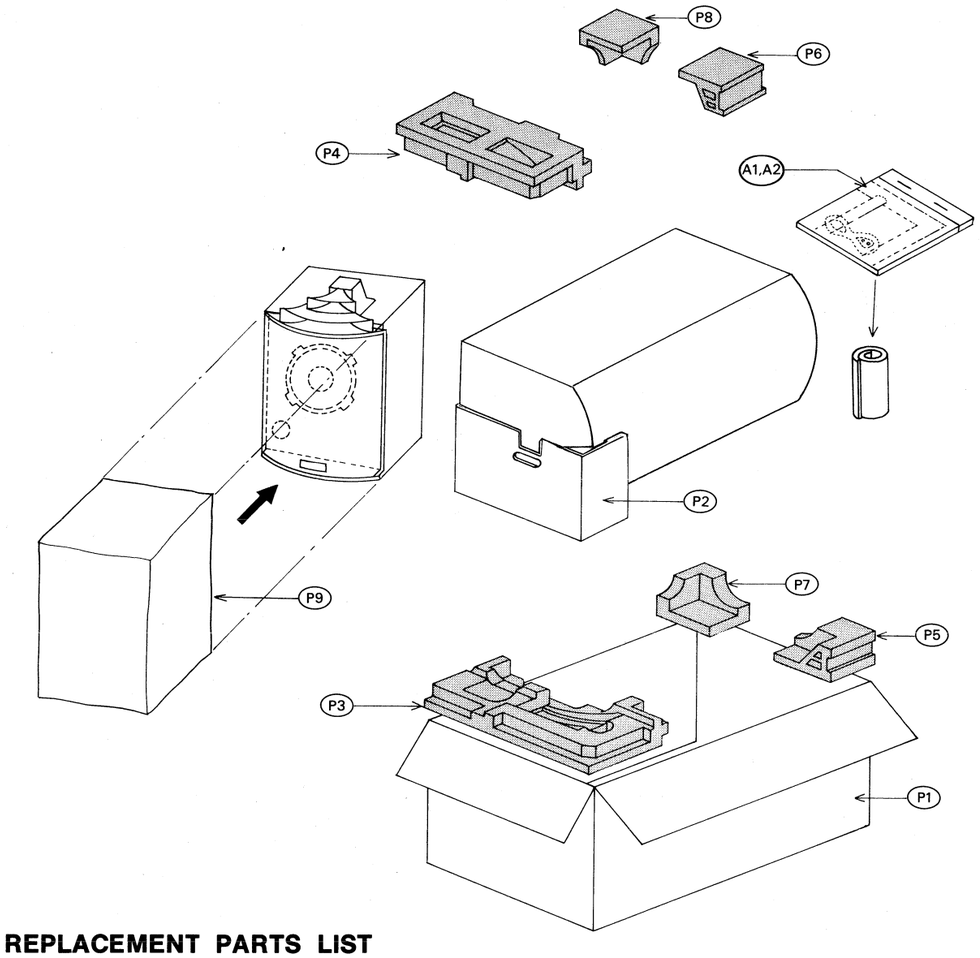
2. Harmonic Distortion Characteristics (MIC-SP. 2m, Input Voltage 2.45V)



3. Directional Characteristics and Impedance Response (MIC-SP. 2m, Input Voltage 2.45V)



■ PACKINGS



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NOTE: 1. Part numbers are indicated on most mechanical parts.
Please use this part number for parts orders.

Ref. No.		Part No.	Part Name & Description
ACCESSORY PARTS			
A1		SQF10059	Instruction Book
A2		SWX291	Speaker Cord
PACKING PARTS			
P1 (XG,XGE)		SPG1639-1	Carton
P1 (XGF)		SPG1639-2	Carton
P2		SPS1707-1	Pad, Top
P3		SPS1709	Pad, Corner, Left
P4		SPS1709-1	Pad, Corner, Right
P5		SPS1711	Pad, Corner, Front
P6		SPS1711-1	Pad, Corner, Front
P7		SPS1713	Pad, Corner, Rear
P8		SPS1713-1	Pad, Corner, Rear
P9		SPP457	Polyethylene Bag

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